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# Human Skin Uptake of Trichloroethylene from Short-Term Aqueous Exposure

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Accelerator mass spectrometry (AMS), a very sensitive analytical method for measuring radioisotopes, was used to measure *in vitro* dermal uptake of $^{14}$C-trichloroethylene (TCE) at very low aqueous concentrations for exposures lasting from 1 to 60 min. Full-thickness human skin (n=3) used within 48 hr of surgery was exposed to 5.3 ± 1.8 μg/L of TCE at 22˚C in a two-chamber diffusion cell for 1, 5, 15, 30, and 60 min. $^{14}$C content of tissue cores from the exposed skin was determined by AMS to the femtogram ($10^{-15}$) level. The data from three individuals were expressed as an area- and concentration-normalized flux, $R(t)$, at time $t$ (h), where $R(t)$ has units of cm (i.e., mL of aqueous solution cleared by net $^{14}$C uptake into each dermal plug analyzed, per cm$^2$ of exposed plug surface area). When plotted as a function of time$t$, the data were somewhat nonlinear (p=0.05). An exponential/saturation model fit was consistent with the data (p = 0.84), and yielded an estimated slope ($K_p$) of 0.21 ± 0.045 cm/h.

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